REMARKS

Reconsideration of the application is respectfully requested.

I. Status of the Claims

Claim 4 has been canceled without prejudice or disclaimer of the subject matter therein.

Claim 3 has been amended to correct informalities, no new matter is added.

Claims 1-3 are pending.

II. Restriction Requirement

Pursuant to the telephone interview on March 1, 2006, Applicants elected Group I, claims 1-3 for prosecution. The election is **without** traverse and claim 4, directed to the non-elected group, has been canceled.

III. Rejection under 35 U.S.C. § 112

Claim 3 has been rejected under 35 U.S.C. § 112, second paragraph, as indefinite. Applicants have amended claim 3 to now depend from claim 2. There is now proper antecedent basis for the "aluminum oxide core thin layer." Applicants respectfully request that the rejection be withdrawn.

IV. Rejections under 35 U.S.C. § 102

Claims 1-3 are rejected under 35 U.S.C. § 102(b) as anticipated by at least one of U.S. Patent No. 5,851,687 to Ljungberg ("Ljungberg I"); U.S. Patent No 5,654,035 to Ljungberg et al. ("Ljungberg II"); U.S. Patent No. 5,861,210 to Lenander et al. ("Lenander"); U.S. Patent No.

6,183,846 to Moriguchi et al. ("Moriguchi") U.S. Patent No. 6,293,739 to Uchino et al. ("Uchino"); U.S. Patent No. 5,137,774 to Ruppi; Japanese Patent Publication No. 11-138308 ("Mitsubishi I"); or Japanese Patent Publication No. 06-31503 ("Mitsubishi II"). The Examiner contends that each of the above references disclose all the elements of the claims. Applicants respectfully traverse the rejection.

Claim 1 recites the element:

> an aluminum oxide layer having an α crystal structure in the state of being formed by chemical vapor deposition, which is an upper layer, ***comprising the highest peak in the inclination section within a range of 0-10 degrees*** in the case of emitting an electron beam onto individual crystal grains having a hexagonal crystal lattice present within the measuring range of the surface polishing plane, ***measuring the inclination of the (0001) crystal plane of the crystal grains relative to the normal of the surface polishing plane*** using a field emission scanning electron microscope, dividing the measured inclinations within a range of 0-45 degrees indicated by the individual crystal grains for each pitch of 0.25 degrees. (emphasis added).

Thus, most of the α type aluminum oxide crystal grains in the aluminum oxide layer (the upper layer) are arranged so that the inclination of their (0001) crystal planes with respect to the surface polishing plane falls within a range of 0-10 degrees. This is illustrated in FIG. 1A. Tables 6-1 and 6-2 of the Specification, show the significance of this range. Table 6-1 indicates that examples of the invention where the highest peaks were within a range of 0-10 degrees, withstood the cutting tests, and exhibited flank wear of 0.45 mm or less. In contrast, as shown in Table 6-2, Comparative Examples 1 to 20, which indicated highest peaks within a range of 25-35 degrees, could not withstand the same cutting tests. None of the above cited prior art disclose the claimed plane.

Ljungberg I discloses an alumina coated cutting tool. Ljungberg I discloses, in column 3, lines 24 to 27, that the Al_2O_3 layer has a preferred crystal growth orientation in the (110)-direction.

Therefore, Ljungberg I does not disclose nor suggest the all the elements of claim 1 of the present invention.

Ljungberg II discloses an alumina coated cutting tool. Ljungberg II discloses, in column 3, lines 23 to 26, that the Al_2O_3 layer has a preferred crystal growth orientation in the (012)-direction. Therefore, Ljungberg II does not disclose or suggest the all the elements of claim 1 of the present invention.

Lenander discloses an aluminum oxide coated tool. Lenander, in column 3, lines 49 to 51, discloses that the Al_2O_3 layer has a preferred crystal growth orientation in the (012)-direction or the (104)-direction. Therefore, Lenander does not disclose nor suggest all the elements of claim 1 of the present invention.

Moriguchi discloses a coated hard metal material and, in column 11, lines 58 to 65, the Al_2O_3 layer has a maximum peak strength of X-ray diffraction as to a crystal plane which is selected from the group consisting of (104) and (116). One of ordinary skill in the art is aware that if the (0001) crystal plane of an Al_2O_3 layer corresponds to the surface of the coating, the Al_2O_3 layer should have the maximum peak strength of X-ray diffraction as to a (006) crystal plane. Thus, Moriguchi's crystal plane is not inclined in the (0001) plane. Therefore, Moriguchi does not disclose or suggest this element of claim 1 of the present invention.

Uchino discloses a coated cemented carbide cutting tool with an Al_2O_3 layer having a preferred crystal growth orientation in the (012), or (104) and (116) crystal plane, *see*, column 4, lines 3 to 18. Therefore, Uchino does not disclose nor suggest all the elements of claim 1 of the present invention.

Ruppi discloses a multi-oxide coated carbide body and is silent about the orientation of the Al_2O_3 layer. Therefore, Ruppi does not teach or suggest an aluminum oxide layer having an inclination of the (0001) crystal plane of the present invention.

Mitsubishi I is also silent about the orientation of the Al_2O_3 layer. Therefore, Mitsubishi I does not disclose or suggest all the elements of claim 1 of the present invention.

Mitsubishi II discloses a coated cutting tool. As explained in the English Abstract, the Al_2O_3 layer of Mitsubishi II has a ratio of the peak intensity of a (030) surface to a (104) surface obtained by X-ray diffraction that satisfies $I(030)/I(104)>1$. One of ordinary skill in the art is aware that if the (0001) crystal plane of an Al_2O_3 layer corresponds to the surface of the coating, the Al_2O_3 layer should have the maximum peak strength of X-ray diffraction in (006) crystal plane. Therefore, Mitsubishi II does not disclose or suggest all the elements of claim 1 of the present invention.

Claims 2 and 3 depend from claim 1 and are allowable based at least on the arguments above.

Thus, none of the prior art documents anticipate or can be combined to render the present invention obvious. Applicants respectfully request that the above rejections be withdrawn and claims 1 to 3 of the present application should be allowed.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

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Respectfully submitted,

By _____

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